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Amendments to Claims

Please amend the claims as follows:

1 (currently amended). A method of detecting double-talk and path changes in an echo cancellation system including a Least Mean Squares adaptive filter for generating an echo cancellation signal, comprising:

generating a cross correlation matrix

$$R = E[XX^T]$$

where E is the statistical expectation operator and

$$X = \begin{bmatrix} X_0 \\ X_1 \end{bmatrix} \text{ where}$$

X_0 is an echo path signal and X_1 is an estimated echo signal generated by said adaptive filter; and
performing a matrix operation on said matrix R to generate a characteristic value
determinative of the correlation between said signals X_0 and X_1 ; and
correlation-based matrix of signals in said echo cancellation system; and
analyzing said correlation-based matrix to identify detecting the presence of double-
talk and path changes occurring in said system from said characteristic value.

2 (cancelled). A method as claimed in claim 1, wherein said correlation-based matrix is generated using zero-lag auto-and cross-correlations of said signals.

3 (currently amended). A method as claimed in claim 21, wherein said characteristic value is the determinant a determinant of said matrix is used to detect said double talk and path changes.

4. A method as claimed in claim 3, wherein said double-talk and path changes are inferred when the value of said determinant passes predetermined threshold values.

5 (currently amended). A method as claimed in claim 21, wherein said characteristic value comprises eigendecompositions of said matrix are used to detect said double talk and path changes.

6 (currently amended). A method as claimed in claim 21, wherein said characteristic value comprises singular value decompositions of said matrix are used to detect said double talk and path changes.

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7(currently amended). A method as claimed in claim 2, wherein said characteristic value comprises condition numbers of said matrix are used to detect said double talk and path changes.

8(cancelled).

9(cancelled).

10(currently amended). A method as claimed in claim 9₁, wherein said LMS-Least Mean Square filter implements a normalized-LMS algorithm.

11(currently amended). A method as claimed in claim 1, wherein the elements of said correlation-based matrix are generated in the time domain.

12(original). A method as claimed in claim 1, wherein the elements of said correlation-based matrix are generated in the frequency domain.

13(cancelled).

14(cancelled).

15(cancelled).

16(cancelled).

17(cancelled).

18 cancelled).

19 cancelled).

20 cancelled).

21 cancelled).

22(cancelled).